

PATENT ABSTRACTS OF JAPAN

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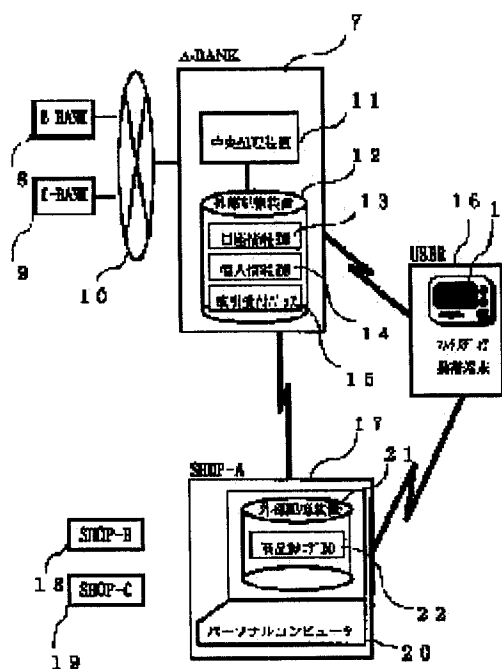
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(21)Application number : **09-251645**(71)Applicant : **HITACHI LTD
HITACHI INFORMATION
NETWORK LTD**(22)Date of filing : **17.09.1997**(72)Inventor : **YOSHIOKA YOSHITAKA
MIWA YUKIO****(54) ELECTRONIC MONEY TRANSACTION SYSTEM USING MULTIMEDIA
PORTABLE TERMINAL**

(57)Abstract:

PROBLEM TO BE SOLVED: To enable only user who passes personal authentication to perform business trade by performing the personal authentication by using a device whose place of use is not restricted like a multimedia portable terminal and by combination of information which is unique to an individual and impossible to be forged like a retina pattern and a fingerprint.

SOLUTION: The business trade is performed by making access from the multimedia portable terminal 1 to a store 17 by a user, their own bank account numbers are ciphered so as not to be known to the opposite party, added to a trade result, transmitted to the opposite party of the trade by both of the user and the store, own ciphered keys each is added to the information transmitted from the opposite party and the information is transmitted to a bank 7 by each of the user and the store. The trading result of the information transmitted

from both of the user and the store are deciphered by using a ciphering key attached by each party of the trade, coincidence of a purchasing amount of the trade transmitted by the user with a sale amount transmitted by the store is confirmed and the amount is transferred from the bank account only when the amounts coincide with each other by the bank.

LEGAL STATUS

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* NOTICES *

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3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] In the system which a user accesses the personal computer of a store from a multimedia personal digital assistant, and trades within the limits of its account balance It attests. the individual humanity news which extracts a retina pattern and a fingerprint using said personal digital assistant, and has registered it into the bank beforehand -- comparing -- him -- After the goods selection which will use said personal digital assistant which acquired its account balance information if there is no problem, and he wishes, Transmit one's account number enciphered to the store, and a store adds its code key to it, and transmits it to a bank. A store transmits its

account number enciphered to the user, and a user adds his code key to it, and transmits to a bank. Moreover, in a bank The cybermoney dealings method characterized by transferring to account and settling accounts only when the sales amount which decoded the account number and has transmitted from a store by each code key in the bank, and the purchase amount of money which has transmitted from the user are in agreement.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is cybermoney dealings which needs the goodness of user-friendliness which does not pinpoint the location to be used and high security.

[0002]

[Description of the Prior Art] For example, as a conventional cybermoney dealings method, balance information is written in a medium like [equipment / of a bank / specific] an IC card, and a user goes to a store etc. and trades using said medium so that it may be indicated by JP,3-92966,A. A store side is memorized by the total file of quotient inside of a shop, the dealings result is transmitted to a bank, and the method which transfers to account in a bank because a bank specifies individual humanity news, such as a name, the account number, etc. of the method which settles accounts by the change of applicable accounts, or a dealings partner, is held.

[0003]

[Problem(s) to be Solved by the Invention] The location which a user goes to a store or trades in the above methods will be pinpointed. The real-time dealings which are the fatal defects as cash of transmitting a total file to a bank from a store cannot be performed. Possibility of being reproduced since it is dependent only on physical devices, such as an IC card, comes out. Charge an amount of money with a store higher than the amount of money which the user purchased to the bank, or If a dealings partner's individual humanity news is not exhibited to a partner unlike the concept of the commercial transaction in the original cash in which an account transfer will be performed, with no guarantee by which it is not rewritten in information by the 3rd person, there is a fault that a commercial transaction cannot be performed etc.

[0004] Then, the purpose of this invention is offering a cybermoney dealings method with the high security which feels easy with the goodness of a user's user-friendliness and which can be used.

[0005]

[Means for Solving the Problem] It will be as follows if the outline of a typical thing is briefly explained among invention indicated in main subject.

[0006] namely, the combination of the information which cannot be altered [that the cybermoney dealings method of this invention is peculiar to each people called a retina pattern and a fingerprint using the equipment which does not pinpoint a location which is called a multimedia personal digital assistant, and to be used, and] -- him -- it can attest and only the user who passed the authentication can perform a commercial transaction. Also in the commercial transaction, a user accesses a store from said terminal and performs a commercial transaction, and it enciphers that a partner does not understand his account number, and both add to a dealings result, transmit to a dealings partner, they add their code key to the information to which each was transmitted by the partner, and transmit to a bank. It checks that the purchase amount of money of the dealings which decoded the dealings result using the code key to which each

dealings partner has attached the information which both have transmitted, and the user has transmitted, and the sales amount of a bank which the store has transmitted correspond, and only when in agreement, it transfers to account.

[0007]

[Embodiment of the Invention] Hereafter, one example of the cybermoney dealings method by this invention is explained to a detail using a drawing.

[0008] The appearance schematic diagram of the multimedia personal digital assistant which uses drawing 1 for the cybermoney dealings method of this invention, The outline block diagram of the cybermoney trading system whose drawing 2 is this example, the explanatory view showing the contents of the account information database which drawing 3 has in the external storage connected with the central processing unit in the bank in this example, The explanatory view showing the contents of the personal data base which drawing 4 has in said external storage in this example, The explanatory view showing the contents of the working area for dealing dealings collating which drawing 5 has in said external storage in this example, The explanatory view showing the contents of the goods catalog database which drawing 6 has in the external storage connected to the personal computer of the quotient inside of a shop in this example, him [in / in drawing 7 / this example] -- the flow chart Fig. showing balance check actuation between a bank and a terminal according to authentication and drawing 8 are the flow chart Figs. showing the cybermoney dealings method in the cybermoney dealings system of this example.

[0009] First, drawing 2 explains the cybermoney dealings structure of a system of this example.

[0010] The multimedia personal digital assistants 1 used for cybermoney dealings of this examples are the display 2 with a touch panel input function, CCD camera 3, a microphone 4, a scanner 5, and equipment equipped with the loudspeaker 6, and have the function which accesses a bank, a store, etc. by radio. In case radio is performed, a user enciphers his telephone number, transmits and also has the function which can be made to answer, without its telephone number being known by the transmitting partner.

[0011] It is not absolutely accessed [of 12 external storage connected to the central processing unit 11 of A-BANK7] from the outside, and writing and read-out are only from the connected central processing unit. When the account information database 13 which had the information on the account number data 24 of the depositor of A-BANK, the name data 25, and the balance data 26 in said external storage, the personal data base 14 with an A-BANK depositor's detailed individual humanity news, and a commercial transaction are performed, dealings reception buffer 15 field which collates the sales data 39 which SHOP-A17 has transmitted, and the purchase data 43 which USER16 has transmitted, and computes the account number 47 of USER and the account number of SHOP-A is stored.

[0012] Since the personal computer 20 of SHOP-A17 supports the function which can be made to answer, without enciphering one's telephone number, transmitting and its telephone number being known by the transmitting partner in case the user of the multimedia personal digital assistant 1 performs radio, he does not need to be conscious of a partner's telephone number at the time of a reply to a terminal.

[0013] Moreover, the catalog database 22 of the goods which the store is treating is stored in the external storage 21 connected to this personal computer.

[0014] It connects with the financial institution network 10, and A-BANK can exchange data with other financial institutions called B-BANK8 and C-BANK9 which were connected like the network.

[0015] The same system as SHOP-A exists in two or more stores like SHOP-B18 or SHOP-C19.

[0016] Next, drawing 8 explains the flow of a cybermoney trading system of operation about an operation of this example.

[0017] USER takes out goods purchase directions with introduction and step 801 from a personal digital assistant.

[0018] next, a personal digital assistant user -- USER -- or it is correct to him -- the following procedures -- him -- it attests.

[0019] In step 702, a retina pattern is extracted with CCD camera 3 of a multimedia personal digital assistant, and a scanner 5 also performs extraction of a fingerprint to it and coincidence.

[0020] In step 703, it enciphers and transmits with the algorithm to which the retina pattern and fingerprint of USER extracted at step 702 were uniquely set by USER and A-BANK to A-BANK.

[0021] the retina pattern received at step 703 in step 704, the data of a fingerprint, and the USER retina pattern data 35 and the USER fingerprint data 36 in the personal data base beforehand registered at the time of account establishment -- step 705 -- collating -- him -- it attests.

[0022] if -- him -- if it passes to authentication, at step 706, A-BANK will encipher the USER balance information 31 in an account information database with the aforementioned algorithm to USER, and will answer USER.

[0023] moreover, him -- the case where abnormalities are discovered by authentication -- step 708 -- setting -- BANK-A -- USER -- receiving -- him -- what authentication went wrong is told, and an error is displayed and it ends.

[0024] If he authentication is passed normally, the balance information on USER will be displayed. Although these dealings cannot consider double dealings because of a real-time operation in that case, after waiting until settlement of the commercial transaction performed to last time by way of precaution is completed, they make balance information the specification which does not answer a letter.

[0025] And in step 804, USER accesses SHOP-A by radio, and it chooses from the goods catalog database 22 of SHOP-A, and in step 805, the purchase amount of money of the goods which he purchased is memorized to a personal digital assistant, and to SHOP-A, USER adds the unique USER code key 45 using a random number in that case, and transmits to its account number at it.

[0026] SHOP-A memorizes the sales amount of the goods which he sold in step 807 to a personal digital assistant, using the function in which a letter can be answered even if the telephone number of the aforementioned partner of a personal computer 20 is not known in step 808, to USER, adds the unique SHOP-A code key 41 using a random number to its account number, and answers it.

[0027] Next, in step 809, USER attaches the USER code key generated at the purchase amount of money of the dealings transmitted at step 808, the account number as which SHOP-A was enciphered, and step 806, and transmits to BANK-A.

[0028] Moreover, in step 810, SHOP-A attaches the SHOP-A code key generated at the sales amount of the dealings transmitted at step 806, the account number as which SHOP-A was enciphered, and step 808, and transmits to BANK-A.

[0029] In BANK-A, in step 811, the purchase amount of money which USER has transmitted is compared with the sales amount which SHOP-A has transmitted, if not in agreement, in step 814, it connects that abnormalities are in account change information from BANK-A to USER and SHOP-A, and it tells that a commercial transaction is invalid.

[0030] Moreover, in step 811, the purchase amount of money which USER has transmitted is compared with the sales amount which SHOP-A has transmitted, and if in agreement, in step

812, BANK-A decodes the account number 44 (account number +SHOP-A code key of SHOP-A) of enciphered SHOP-A using the SHOP-A code key 41 of the goods sales data 39, and stores it in the SHOP-A account number 48.

[0031] Furthermore, in step 812, BANK-A decodes the account number 39 (account number +USER code key of USER) of enciphered USER using the USER code key 45 of the user purchase data 43, and stores it in the USER account number 47.

[0032] After computing both account number by the above, the dealings amount of money (= sales amount = purchase amount of money) is changed to the account of USER from the account of SHOP-A, and the USER balance 31 in an account information database and the balance 32 of SHOP-A are rewritten.

[0033] then, in step 813, processing terminated normally to BANK-A to USER, and SHOP-A -- thing transmission is carried out and cybermoney dealings are completed.

[0034] As mentioned above, although the time of 1 dealings was explained, when two or more dealings occur in coincidence, a bank is managed by the dealings number.

[0035]

[Effect of the Invention] It will be as follows, if the effectiveness acquired as be alike among this inventions with a typical thing is explained as explained above.

[0036] (1) -- the combination of the information which cannot be altered [peculiar to each people called a retina pattern and a fingerprint, and], without pinpointing the location which conducts cybermoney dealings by using . multimedia personal digital assistant -- him -- the high system of the goodness of a user's user-friendliness and the security which is not abused for the others can be offered by attesting.

[0037] (2) Money dealings are realizable with the same concept as the commercial transaction of cash original of opening neither . name nor the account number to a dealings partner. Usually, only with a name or the account number, although a bank account cannot be operated, the system which can perform prevention of an unauthorized use of the protection and individual humanity news of the privacy that a crime is performed or a user prevents being made the object of the direct mail which does not carry out hope, either using individual humanity news, such as a name, the account number, etc. of the user who traded, because a store obtains a user's individual humanity news can be offered.

[0038] (3) The account change of . bank is hit, a store, rewriting of a user's dealings data on purpose, and modification of accidental data called data transformation can be checked, and wrong account change processing is not performed.

TECHNICAL FIELD

[Field of the Invention] This invention is cybermoney dealings which needs the goodness of user-friendliness which does not pinpoint the location to be used and high security.

PRIOR ART

[Description of the Prior Art] For example, as a conventional cybermoney dealings method, balance information is written in a medium like [equipment / of a bank / specific] an IC card, and a user goes to a store etc. and trades using said medium so that it may be indicated by JP,3-92966,A. A store side is memorized by the total file of quotient inside of a shop, the dealings result is transmitted to a bank, and the method which transfers to account in a bank because a

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] The location which a user goes to a store or trades in the above methods will be pinpointed. The real-time dealings which are the fatal defects as cash of transmitting a total file to a bank from a store cannot be performed. Possibility of being reproduced since it is dependent only on physical devices, such as an IC card, comes out. Charge an amount of money with a store higher than the amount of money which the user purchased to the bank, or If a dealings partner's individual humanity news is not exhibited to a partner unlike the concept of the commercial transaction in the original cash in which an account transfer will be performed, with no guarantee by which it is not rewritten in information by the 3rd person, there is a fault that a commercial transaction cannot be performed etc.

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[0011] It is not absolutely accessed [of 12 external storage connected to the central processing unit 11 of A-BANK7] from the outside, and writing and read-out are only from the connected central processing unit. When the account information database 13 which had the information on the account number data 24 of the depositor of A-BANK, the name data 25, and the balance data 26 in said external storage, the personal data base 14 with an A-BANK depositor's detailed individual humanity news, and a commercial transaction are performed, dealings reception buffer 15 field which collates the sales data 39 which SHOP-A17 has transmitted, and the purchase data 43 which USER16 has transmitted, and computes the account number 47 of USER and the account number of SHOP-A is stored.

[0012] Since the personal computer 20 of SHOP-A17 supports the function which can be made to answer, without enciphering one's telephone number, transmitting and its telephone number being known by the transmitting partner in case the user of the multimedia personal digital assistant 1 performs radio, he does not need to be conscious of a partner's telephone number at

the time of a reply to a terminal.

[0013] Moreover, the catalog database 22 of the goods which the store is treating is stored in the external storage 21 connected to this personal computer.

[0014] It connects with the financial institution network 10, and A-BANK can exchange data with other financial institutions called B-BANK8 and C-BANK9 which were connected like the network.

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[0016] Next, drawing 8 explains the flow of a cybermoney trading system of operation about an operation of this example.

[0017] USER takes out goods purchase directions with introduction and step 801 from a personal digital assistant.

[0018] next, a personal digital assistant user -- USER -- or it is correct to him -- the following procedures -- him -- it attests.

[0019] In step 702, a retina pattern is extracted with CCD camera 3 of a multimedia personal digital assistant, and a scanner 5 also performs extraction of a fingerprint to it and coincidence.

[0020] In step 703, it enciphers and transmits with the algorithm to which the retina pattern and fingerprint of USER extracted at step 702 were uniquely set by USER and A-BANK to A-BANK.

[0021] the retina pattern received at step 703 in step 704, the data of a fingerprint, and the USER retina pattern data 35 and the USER fingerprint data 36 in the personal data base beforehand registered at the time of account establishment -- step 705 -- collating -- him -- it attests.

[0022] if -- him -- if it passes to authentication, at step 706, A-BANK will encipher the USER balance information 31 in an account information database with the aforementioned algorithm to USER, and will answer USER.

[0023] moreover, him -- the case where abnormalities are discovered by authentication -- step 708 -- setting -- BANK-A -- USER -- receiving -- him -- what authentication went wrong is told, and an error is displayed and it ends.

[0024] If he authentication is passed normally, the balance information on USER will be displayed. Although these dealings cannot consider double dealings because of a real-time operation in that case, after waiting until settlement of the commercial transaction performed to last time by way of precaution is completed, they make balance information the specification which does not answer a letter.

[0025] And in step 804, USER accesses SHOP-A by radio, and it chooses from the goods catalog database 22 of SHOP-A, and in step 805, the purchase amount of money of the goods which he purchased is memorized to a personal digital assistant, and to SHOP-A, USER adds the unique USER code key 45 using a random number in that case, and transmits to its account number at it.

[0026] SHOP-A memorizes the sales amount of the goods which he sold in step 807 to a personal digital assistant, using the function in which a letter can be answered even if the telephone number of the aforementioned partner of a personal computer 20 is not known in step 808, to USER, adds the unique SHOP-A code key 41 using a random number to its account number, and answers it.

[0027] Next, in step 809, USER attaches the USER code key generated at the purchase amount of money of the dealings transmitted at step 808, the account number as which SHOP-A was enciphered, and step 806, and transmits to BANK-A.

[0028] Moreover, in step 810, SHOP-A attaches the SHOP-A code key generated at the sales amount of the dealings transmitted at step 806, the account number as which SHOP-A was

enciphered, and step 808, and transmits to BANK-A.

[0029] In BANK-A, in step 811, the purchase amount of money which USER has transmitted is compared with the sales amount which SHOP-A has transmitted, if not in agreement, in step 814, it connects that abnormalities are in account change information from BANK-A to USER and SHOP-A, and it tells that a commercial transaction is invalid.

[0030] Moreover, in step 811, the purchase amount of money which USER has transmitted is compared with the sales amount which SHOP-A has transmitted, and if in agreement, in step 812, BANK-A decodes the account number 44 (account number +SHOP-A code key of SHOP-A) of enciphered SHOP-A using the SHOP-A code key 41 of the goods sales data 39, and stores it in the SHOP-A account number 48.

[0031] Furthermore, in step 812, BANK-A decodes the account number 39 (account number +USER code key of USER) of enciphered USER using the USER code key 45 of the user purchase data 43, and stores it in the USER account number 47.

[0032] After computing both account number by the above, the dealings amount of money (= sales amount = purchase amount of money) is changed to the account of USER from the account of SHOP-A, and the USER balance 31 in an account information database and the balance 32 of SHOP-A are rewritten.

[0033] then, in step 813, processing terminated normally to BANK-A to USER, and SHOP-A -- thing transmission is carried out and cybermoney dealings are completed.

[0034] As mentioned above, although the time of 1 dealings was explained, when two or more dealings occur in coincidence, a bank is managed by the dealings number.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It uses for the cybermoney dealings method of this invention. It is the appearance schematic diagram of a multimedia personal digital assistant.

[Drawing 2] It is the outline block diagram of the cybermoney trading system which is one example of the cybermoney dealings method of this invention.

[Drawing 3] In this example, it is the explanatory view showing the contents of the account information database in the external storage connected with the central processing unit in a bank.

[Drawing 4] In this example, it is the explanatory view showing the contents of the personal data base in the external storage connected with the central processing unit in a bank.

[Drawing 5] In this example, it is the explanatory view showing the contents of the working area for dealing dealings collating in the external storage connected with the central processing unit in a bank.

[Drawing 6] In this example, it is the explanatory view showing the contents of the goods catalog database in the external storage of the personal computer of quotient inside of a shop.

[Drawing 7] this example -- setting -- him -- it is the flow chart Fig. showing balance check actuation between a bank and a terminal according to authentication.

[Drawing 8] In the cybermoney dealings system of this example, it is the flow chart Fig. showing a cybermoney dealings method.

[Description of Notations]

1 Multimedia Personal Digital Assistant

2 Display with Touch Panel Input Function

3 CCD Camera

- 4 Microphone
- 5 Scanner
- 6 Loudspeaker
- 7 Bank (A-BANK for Explanation)
- 8 Bank (B-BANK for Explanation)
- 9 Bank (C-BANK for Explanation)
- 10 Financial Institution Network
- 11 Central Processing Unit
- 12 External Storage (Personal Computer)
- 13 Account Information Database
- 14 Personal Data Base
- 15 Dealings Reception Buffer
- 16 Multimedia Personal Digital Assistant User (Book Trading System User for Explanation)
- 17 Store (SHOP-A)
- 18 Store (SHOP-B)
- 19 Store (SHOP-C)
- 20 Personal Computer
- 21 External Storage (Personal Computer Connection)
- 22 Goods Catalog Database
- 24 Inside of Account Information Database Account Number Data
- 25 Inside of Account Information Database Name Data
- 26 Inside of Account Information Database Balance Data
- 27 USER (Book Trading System User for Explanation) Account Number
- 28 SHOP-A (Store for Explanation) Account Number
- 29 USER (Book Trading System User for Explanation) Name
- 30 SHOP-A (Store for Explanation) Name [Store Name]
- 31 USER (Book Trading System User for Explanation) Account Balance
- 32 SHOP-A (Store for Explanation) Account Balance
- 33 Inside of Personal Data Base Account Number Data
- 34 Inside of Personal Data Base Name Data
- 35 Inside of Personal Data Base Retina Pattern Data
- 36 Inside of Personal Data Base Fingerprint Data
- 37 Inside of Personal Data Base Address Data
- 38 Inside of Personal Data Base Tele Data
- 39 Inside of Dealings Reception Buffer Goods Sales Data Field
- 40 Inside of Dealings Reception Buffer Encryption User-Data Field
- 41 Inside of Dealings Reception Buffer Store Code Key Data Area
- 42 Inside of Dealings Reception Buffer Goods Sales Amount Data Area
- 43 Inside of Dealings Reception Buffer User Purchase Data Area
- 44 Inside of Dealings Reception Buffer Encryption Store Data Area
- 45 Inside of Dealings Reception Buffer User Code Key Data Area
- 46 Inside of Dealings Reception Buffer User Purchase Amount-of-Money Data Area
- 47 Inside of Dealings Reception Buffer User Account Number Calculation Result Storage Region
- 48 Inside of Dealings Reception Buffer Store Account Number Calculation Result Storage Region

49 Inside of Goods Catalog Database Goods - It is Kind Very Much.
50 Inside of Goods Catalog Database Goods-Minor Key
51 Inside of Goods Catalog Database Goods-Quotient Lot Number Number
52 Inside of Goods Catalog Database Goods-Trade Name
53 Inside of Goods Catalog Database Goods-Unit Price
54 Inside of Goods Catalog Database Goods-PR Information

[Translation done.]

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15/00	3 3 0	15/00 3 3 0 F
17/60		15/21 3 1 0 Z
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(71) 出願人 000005108

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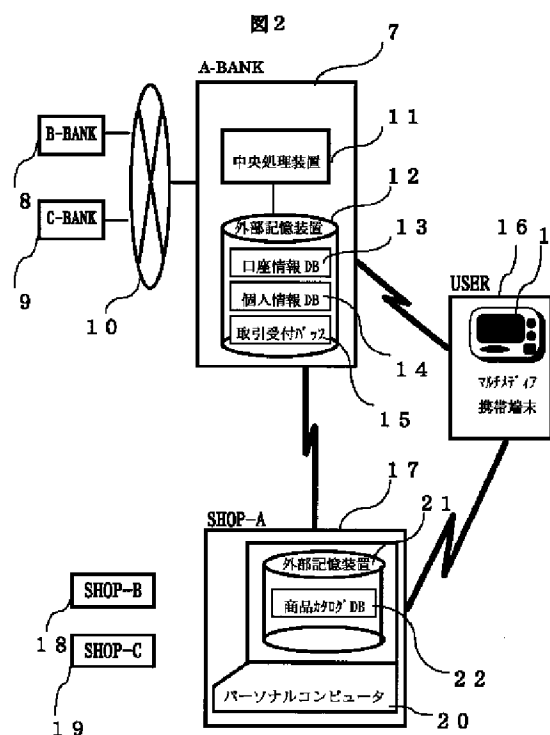
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(54) 【発明の名称】 マルチメディア携帯端末を用いた電子マネー取引方式

(57) 【要約】 (修正有)

【課題】 マルチメディア携帯端末という利用する場所を特定しない装置を用い、網膜パターンと指紋という各個人独特かつ変造不可能な情報の組み合わせによって本人認証を行い、その認証をパスした利用者のみが商取引を行うことができる。

【解決手段】 利用者はマルチメディア携帯端末1から商店17にアクセスし商取引を行ない、両者は自分の口座番号を相手にはわからないように暗号化し取引結果に付加して取引相手に送信し、それぞれが相手から送信された情報に自分の暗号キーを付加して銀行7に転送する。銀行は両者が送信してきた情報をそれぞれの取引相手が添付してきた暗号キーを用いて取引結果を解説し、利用者が送信してきた取引の購入金額と商店が送信してきた販売金額が一致していることを確認し、一致している場合のみ口座振替を行う。



【特許請求の範囲】

【請求項1】利用者はマルチメディア携帯端末より、商店のパーソナルコンピュータにアクセスし、自分の口座残高の範囲内で取引を行うシステムにおいて、前記携帯端末を用い網膜パターンと指紋を採取し、それをあらかじめ銀行に登録してある個人情報と比較して本人認証を行ない、問題無ければ自分の口座残高情報を得た前記携帯端末を利用し、希望する商品選択後、商店に暗号化した自分の口座番号を送信し、商店はそれに自分の暗号キーを付加して銀行に送信し、また商店は利用者に暗号化した自分の口座番号を送信し、利用者はそれに自分の暗号キーを付加して銀行に送信し、銀行では、それぞれの暗号キーによって口座番号の解読をし、銀行では商店から送信してきた販売金額と利用者から送信してきた購入金額が一致したときのみ口座振替を行ない決済することとを特徴とする電子マネー取引方式。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、利用する場所を特定しない使い勝手の良さと高いセキュリティが必要な電子マネー取引。

【0002】

【従来の技術】例えば、従来の電子マネー取引方式としては、特開平3-92966号公報に記載されるように、銀行の特定の装置よりICカードのような媒体に残高情報を書き込み、利用者は商店等に出向き前記媒体を用いて取引を行う。商店側は、商店内の集計ファイルに記憶され、その取引結果を銀行に送信し、銀行は該当口座どうしの振替によって決済を行う方式、または取引相手の氏名や口座番号など個人情報を指定することで銀行内で口座振替を行う方式などが挙げられる。

【0003】

【発明が解決しようとする課題】前記のような方式においては、利用者が商店に出向くかもしくは取引を行う場所が特定されてしまう、商店から銀行に集計ファイルを送信するといった現金としての致命的な欠陥であるリアルタイム取引ができない、ICカード等の物理的な機構のみに依存しているために複製される可能性がでてくる、商店が銀行に対し利用者の購入した金額より高い金額を請求したり、第3者によって情報が書き換えられたりされていない保証の無いまま口座振替が行われてしまう、本来の現金での商取引の概念と違って取引相手の個人情報が相手に対し公開されないと商取引が行えないなどといった欠点がある。

【0004】そこで本発明の目的は、ユーザの使い勝手の良さと安心して利用できる高いセキュリティをもった電子マネー取引方式を提供することである。

【0005】

【課題を解決するための手段】本題において開示される発明のうち、代表的なものの概要を簡単に説明すれば下

記のとおりである。

【0006】すなわち、本発明の電子マネー取引方式は、マルチメディア携帯端末という利用する場所を特定しない装置を用い、網膜パターンと指紋という各個人独特かつ変造不可能な情報の組み合わせによって本人認証を行い、その認証をパスした利用者のみが商取引を行うことができる。その商取引においても、利用者は前記端末から商店にアクセスし商取引を行ない、両者は自分の口座番号を相手にはわからないように暗号化し取引結果に付加して取引相手に送信し、それぞれが相手から送信された情報に自分の暗号キーを付加して銀行に転送する。銀行は両者が送信してきた情報をそれぞれの取引相手が添付してきた暗号キーを用いて取引結果を解読し、利用者が送信してきた取引の購入金額と商店が送信してきた販売金額が一致していることを確認し、一致している場合のみ口座振替を行う。

【0007】

【発明の実施の形態】以下、本発明による電子マネー取引方式の一実施例を図面を用いて詳細に説明する。

【0008】図1は本発明の電子マネー取引方式に用いるマルチメディア携帯端末の外観概略図、図2は本実施例である電子マネー取引システムの概略構成図、図3は本実施例における銀行内の中央処理装置と接続された外部記憶装置にある口座情報データベースの内容を示す説明図、図4は本実施例における前記外部記憶装置にある個人情報データベースの内容を示す説明図、図5は本実施例における前記外部記憶装置にある売買取引照合用作業領域の内容を示す説明図、図6は本実施例における商店内のパーソナルコンピュータに接続された外部記憶装置にある商品カタログデータベースの内容を示す説明図、図7は本実施例における本人認証によって銀行と端末間で残高確認動作を示すフローチャート図、図8は本実施例の電子マネー取引システムでの電子マネー取引方式を示すフローチャート図である。

【0009】まず、図2により本実施例の電子マネー取引システムの構成を説明する。

【0010】本実施例の電子マネー取引に用いるマルチメディア携帯端末1は、タッチパネル入力機能付きディスプレイ2、CCDカメラ3、マイク4、スキャナ5、スピーカ6を備えた装置で、銀行や商店などに無線通信によってアクセスする機能を有する。無線通信を行う際、利用者は自分の電話番号を暗号化して送信し、送信相手に自分の電話番号を知られることなく返信させることができる機能も有している。

【0011】A-BANK7の中央処理装置11に接続された外部記憶装置12は、外部からアクセスされることは絶対になく、書き込みや読み出しは接続された中央処理装置からのみである。前記外部記憶装置には、A-BANKの預金者の口座番号データ24、氏名データ25、残高データ26の情報をを持った口座情報データベ-

ス13、A-BANK預金者の詳細な個人情報を持った個人情報データベース14、商取引が行われた際、SHOP-A17が送信してきた販売データ39とUSER16が送信してきた購入データ43の照合を行いUSERの口座番号47とSHOP-Aの口座番号を算出する取引受付バッファ15領域を格納している。

【0012】SHOP-A17のパーソナルコンピュータ20は、マルチメディア携帯端末1の利用者が無線通信を行う際、自分の電話番号を暗号化して送信し、送信相手に自分の電話番号を知られることなく返信させることができる機能に対応しているため、端末への返信時に相手の電話番号を意識する必要はない。

【0013】また、同パーソナルコンピュータに接続されている外部記憶装置21には、その店が扱っている商品のカタログデータベース22が格納されている。

【0014】A-BANKは、金融機関ネットワーク10に接続されており、ネットワークに同様に接続されたB-BANK8やC-BANK9といった他の金融機関ともデータのやり取りを行うことができる。

【0015】SHOP-Aと同様のシステムが、SHOP-B18やSHOP-C19のように複数の商店に存在する。

【0016】次に、本実施例の作用について、電子マネー取引システムの動作フローを図8により説明する。

【0017】始めに、ステップ801で、USERは携帯端末より商品購入指示をだす。

【0018】次に携帯端末利用者がUSER本人に間違いがないか以下の手順で本人認証を行う。

【0019】ステップ702において、マルチメディア携帯端末のCCDカメラ3で網膜パターンを採取し、それと同時にスキャナ5で指紋の採取も行う。

【0020】ステップ703において、ステップ702で採取したUSERの網膜パターンと指紋を、A-BANKに対してUSERとA-BANKで独自に定められたアルゴリズムで暗号化して送信する。

【0021】ステップ704では、ステップ703で受信した網膜パターンと指紋のデータと、予め口座開設時に登録された個人情報データベース内のUSER網膜パターンデータ35とUSER指紋データ36を、ステップ705で照合して本人認証を行う。

【0022】もし、本人認証にパスすれば、ステップ706でA-BANKは、USERに対して口座情報データベース内のUSER残高情報31を前記のアルゴリズムによって暗号化しUSERに返信する。

【0023】また、本人認証で異常が発見された場合は、ステップ708においてBANK-AはUSERに対し、本人認証が失敗したことを伝え、エラーを表示して終了する。

【0024】本人認証が正常にパスできれば、USERの残高情報を表示する。その際、本取引はリアルタイム

処理のため2重取引は考えられないが、念のため前回に行った商取引の決済が完了するまで待ってから残高情報を返信しない仕様とする。

【0025】そして、ステップ804においてUSERはSHOP-Aに無線通信によってアクセスしSHOP-Aの商品カタログデータベース22より選択し、その際に、ステップ805においてUSERは自分の購入した商品の購入金額を携帯端末に記憶し、SHOP-Aに対しては自分の口座番号に乱数を使ったユニークなUSER暗号キー45を加算して送信する。

【0026】SHOP-Aは、ステップ807において自分の販売した商品の販売金額を携帯端末に記憶し、ステップ808においてパーソナルコンピュータ20の前記の相手の電話番号がわからなくても返信できる機能を用い、USERに対して自分の口座番号に乱数を使ったユニークなSHOP-A暗号キー41を加算して返信する。

【0027】次に、USERはステップ809において、ステップ808にて送信されてきた取引の購入金額、SHOP-Aの暗号化された口座番号とステップ806にて生成したUSER暗号キーを添付してBANK-Aに送信する。

【0028】また、SHOP-Aは、ステップ810において、ステップ806にて送信されてきた取引の販売金額、SHOP-Aの暗号化された口座番号とステップ808にて生成したSHOP-A暗号キーを添付してBANK-Aに送信する。

【0029】BANK-Aでは、ステップ811において、USERが送信してきた購入金額とSHOP-Aが送信してきた販売金額を比較し、もし一致しなければステップ814において、BANK-AからUSERとSHOP-Aに対し口座振替え情報に異常があることを連絡し、商取引が無効である事を知らせる。

【0030】また、ステップ811において、USERが送信してきた購入金額とSHOP-Aが送信してきた販売金額を比較し、一致すればステップ812において、BANK-Aは、暗号化されたSHOP-Aの口座番号44（SHOP-Aの口座番号+SHOP-A暗号キー）を商品販売データ39のSHOP-A暗号キー41を用いて解読し、SHOP-A口座番号48に格納する。

【0031】さらに、ステップ812において、BANK-Aは、暗号化されたUSERの口座番号39（USERの口座番号+USER暗号キー）を利用者購入データ43のUSER暗号キー45を用いて解読し、USER口座番号47に格納する。

【0032】両者の口座番号を上記によって算出した後、取引金額（＝販売金額－購入金額）をSHOP-Aの口座からUSERの口座へ振替え、口座情報データベース内のUSER残高31とSHOP-Aの残高32を

書き換える。

【0033】その後、ステップ813においてBANK-Aから、USERとSHOP-Aに対し処理が正常終了したこと送信し電子マネー取引を完了する。

【0034】以上、1取引の時について説明したが、同時に複数の取引が発生した場合は、銀行は取引ナンバーにより管理する。

【0035】

【発明の効果】以上説明したように本発明のうち代表的なものによって得られる効果を説明すれば、下記のとおりである。

【0036】(1). マルチメディア携帯端末を用いることで電子マネー取引を行う場所を特定することなく、網膜パターンと指紋という各個人独特かつ変造不可能な情報の組み合わせによって本人認証を行うことで、ユーザの使い勝手の良さと、他者に悪用されることのないセキュリティの高いシステムが提供できる。

【0037】(2). 氏名や口座番号を取引相手に公開しないといった現金本来の商取引と同様の概念でマネー取引が実現できる。通常、氏名や口座番号のみでは、銀行口座を操作することはできないが、取引を行った利用者の氏名や口座番号など個人情報を使って犯罪が行われたり、商店が利用者の個人情報を得ることでユーザは希望もしないダイレクトメールの対象にされることを防止するといったプライバシーの保護・個人情報の不正使用の防止ができるシステムが提供できる。

【0038】(3). 銀行の口座振替えにあたって、商店や利用者の取引データの故意の書き換えや、データ化けといった偶然的データの更改がチェックでき、間違った口座振替え処理が行われない。

【図面の簡単な説明】

【図1】本発明の電子マネー取引方式に用いる マルチメディア携帯端末の外観概略図である。

【図2】本発明の電子マネー取引方式の一実施例である電子マネー取引システムの概略構成図である。

【図3】本実施例において、銀行内の中央処理装置と接続された外部記憶装置にある口座情報データベースの内容を示す説明図である。

【図4】本実施例において、銀行内の中央処理装置と接続された外部記憶装置にある個人情報データベースの内容を示す説明図である。

【図5】本実施例において、銀行内の中央処理装置と接続された外部記憶装置にある売買取引照合作業領域の内容を示す説明図である。

【図6】本実施例において、商店内のパーソナルコンピュータの外部記憶装置にある商品カタログデータベースの内容を示す説明図である。

【図7】本実施例において、本人認証によって銀行と端末間で残高確認動作を示すフローチャート図である。

【図8】本実施例の電子マネー取引システムにおい

て、電子マネー取引方式を示すフローチャート図である。

【符号の説明】

- 1 マルチメディア携帯端末
- 2 タッチパネル入力機能付きディスプレイ
- 3 CCDカメラ
- 4 マイク
- 5 スキャナ
- 6 スピーカ
- 7 銀行（説明用 A-BANK）
- 8 銀行（説明用 B-BANK）
- 9 銀行（説明用 C-BANK）
- 10 金融機関ネットワーク
- 11 中央処理装置
- 12 外部記憶装置（パーソナルコンピュータ）
- 13 口座情報データベース
- 14 個人情報データベース
- 15 取引受付バッファ
- 16 マルチメディア携帯端末ユーザ（説明用 本取引システム利用者）
- 17 商店（SHOP-A）
- 18 商店（SHOP-B）
- 19 商店（SHOP-C）
- 20 パーソナルコンピュータ
- 21 外部記憶装置（パーソナルコンピュータ接続）
- 22 商品カタログデータベース
- 24 口座情報データベース内 口座番号データ
- 25 口座情報データベース内 氏名データ
- 26 口座情報データベース内 残高データ
- 27 USER（説明用 本取引システム利用者）口座番号
- 28 SHOP-A（説明用 商店）口座番号
- 29 USER（説明用 本取引システム利用者）氏名
- 30 SHOP-A（説明用 商店）氏名[商店名]
- 31 USER（説明用 本取引システム利用者）口座残高
- 32 SHOP-A（説明用 商店）口座残高
- 33 個人情報データベース内 口座番号データ
- 34 個人情報データベース内 氏名データ
- 35 個人情報データベース内 網膜パターンデータ
- 36 個人情報データベース内 指紋データ
- 37 個人情報データベース内 住所データ
- 38 個人情報データベース内 TELデータ
- 39 取引受付バッファ内 商品販売データ領域
- 40 取引受付バッファ内 暗号化利用者データ領域
- 41 取引受付バッファ内 商店暗号キーデータ領域
- 42 取引受付バッファ内 商品販売金額データ領域
- 43 取引受付バッファ内 利用者購入データ領域
- 44 取引受付バッファ内 暗号化商店データ領域

- 4 5 取引受付バッファ内 利用者暗号キーデータ
領域
- 4 6 取引受付バッファ内 利用者購入金額データ
領域
- 4 7 取引受付バッファ内 利用者口座番号算出結
果記憶領域
- 4 8 取引受付バッファ内 商店口座番号算出結果

【図 1】

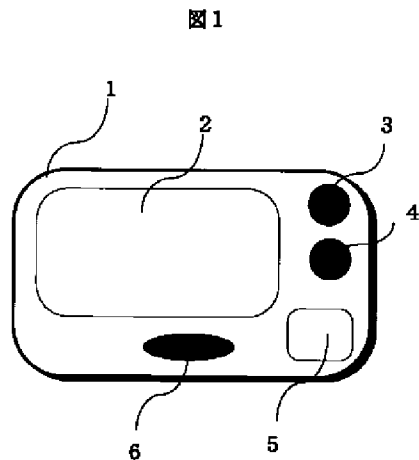


図 1

- 記憶領域
- 4 9 商品カタログデータベース内 商品-大分類
- 5 0 商品カタログデータベース内 商品-小分類
- 5 1 商品カタログデータベース内 商品-商品番号
- 5 2 商品カタログデータベース内 商品-商品名
- 5 3 商品カタログデータベース内 商品-単価
- 5 4 商品カタログデータベース内 商品-PR情報

【図 2】

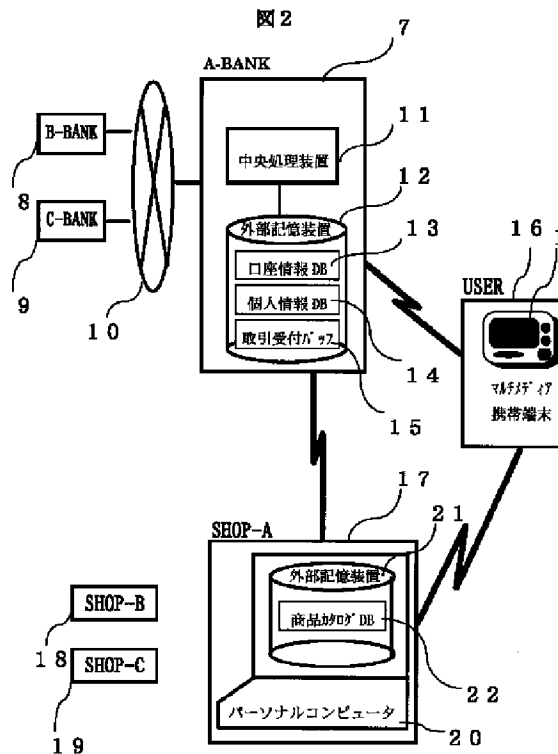


図 2

【図 3】

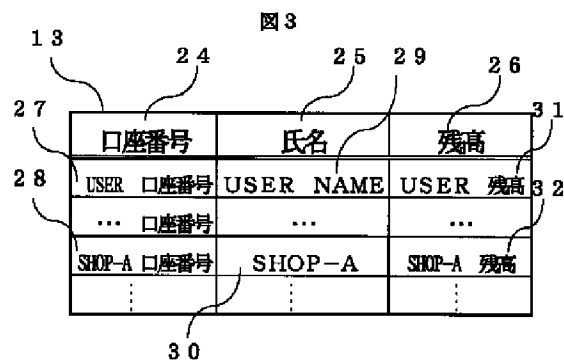


図 3

【図 4】

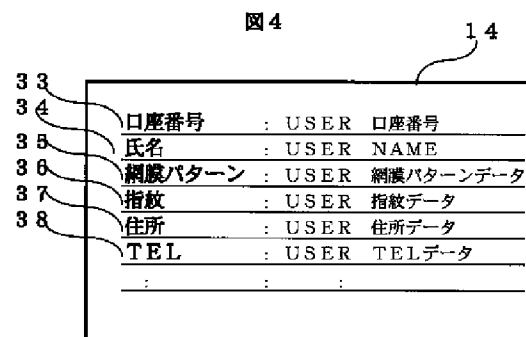
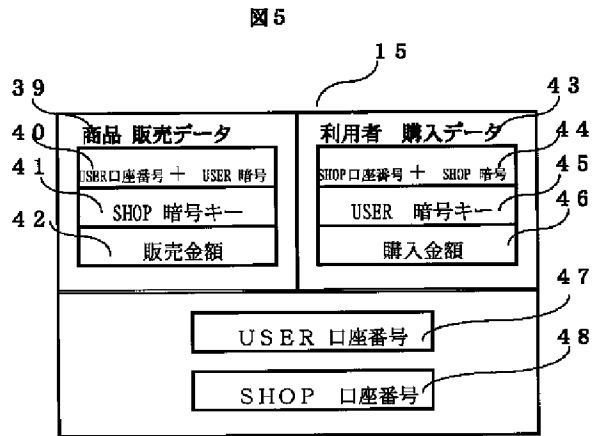


図 4

【図5】



【図6】

図6

大分類	小分類	商品番号	商品名	単価	PR
:	:	:	:	:	:
:	:	:	:	:	:
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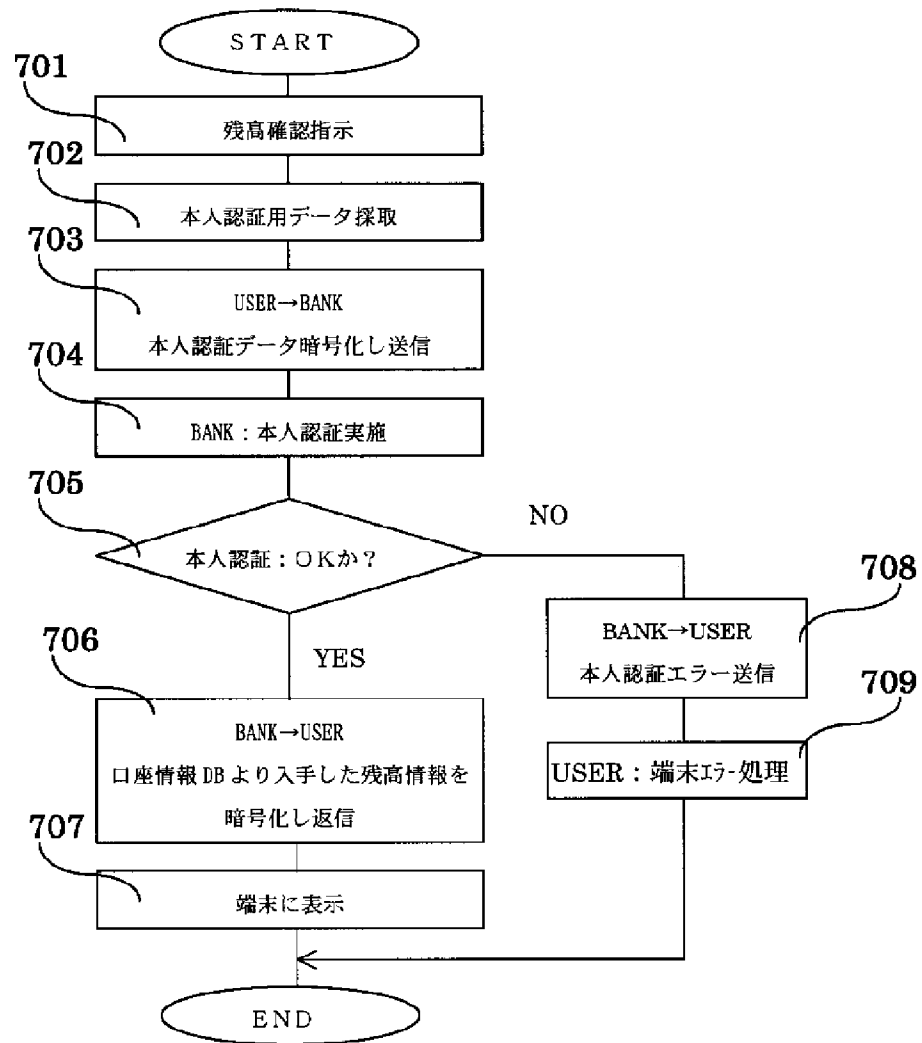
52

53

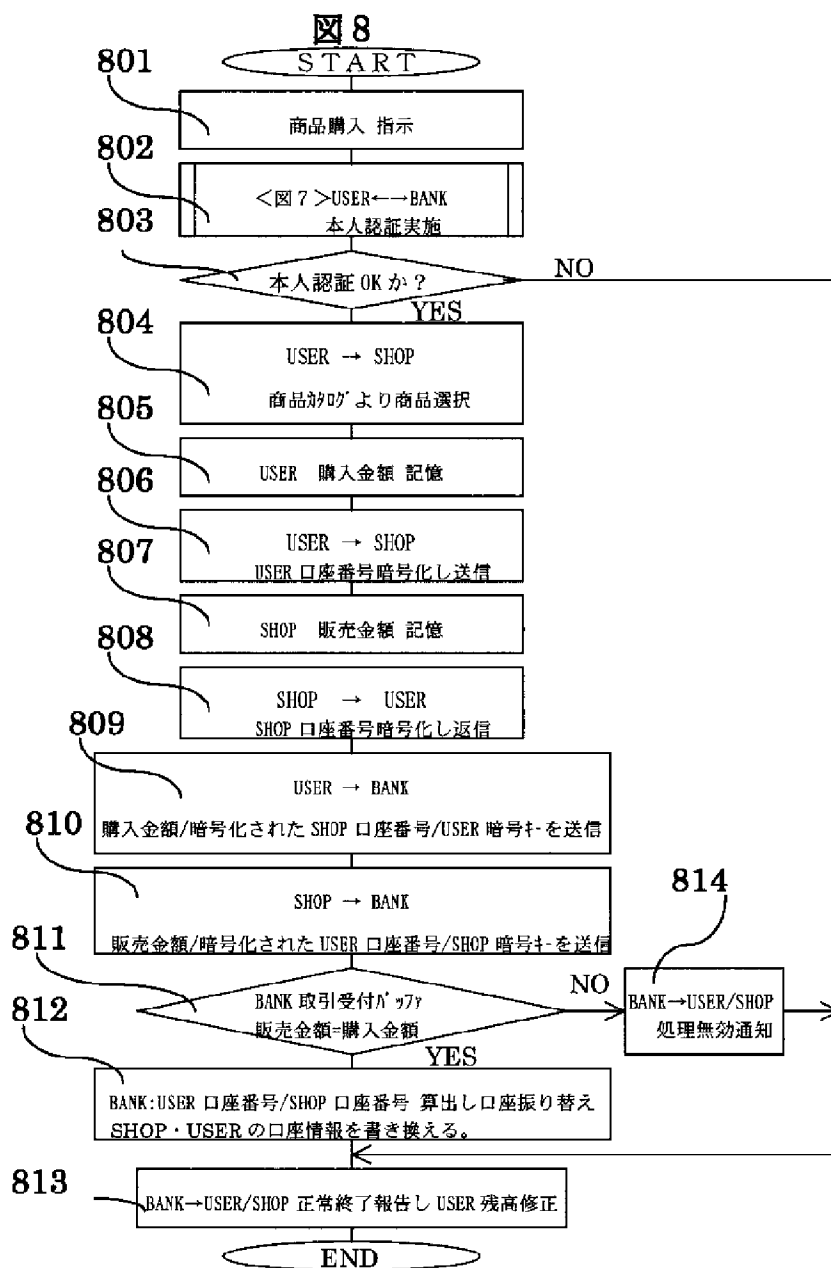
54

【図 7】

図 7



【図 8】



フロントページの続き

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